Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1. (currently amended) A method of determining degradation of a polymer, the method comprising the steps of:
adding conductive particles to the polymer to form a conductive composite comprising a preselected weight percent of conductive particles;
making an electrical connection with the conductive composite and measuring an electrical property of the conductive composite; and
equating the measured electrical property of the conductive composite, said measured electrical property consistent with a decrease in electrical resistivity, with ~~the~~ an electrical property of a previously-degraded sample of the conductive composite to determine the degradation of the polymer.

2. (previously presented) The method of claim 1 wherein the measured electrical property is electrical resistivity.

3. (previously presented) The method of claim 1 wherein the measured electrical property is electrical conductivity.

4. (previously presented) The method of claim 1 wherein the degradation of the polymer is mechanical degradation of the polymer.

5. (previously presented) The method of claim 4 wherein the mechanical property comprises a durometer of the polymer.

6. (previously presented) The method of claim 4 wherein the mechanical property comprises an elongation property of the polymer.

7. (previously presented) The method of claim 4 wherein the mechanical property comprises a hardness of the polymer.

8. (previously presented) The method of claim 4 wherein the mechanical property comprises a tensile strength of the polymer.

9. (previously presented) The method of claim 4 wherein the mechanical property comprises a toughness of the polymer.

10. (previously presented) The method of claim 1 wherein the degradation of the polymer is a chemical degradation.

11. (previously presented) The method of claim 10 wherein the chemical degradation comprises a measure of oxidation of the polymer.

12. (previously presented) The method of claim 10 wherein the chemical degradation comprises a measure of a remaining amount of anti-oxidant added to the polymer.

13. (previously presented) The method of claim 1 wherein the previously degraded sample was degraded by an accelerated aging means.

14. (previously presented) The method of claim 13 wherein the accelerated aging means comprises aging in an environment elevated in temperature as compared to the normal operating temperature of the polymer.

15. (previously presented) The method of claim 13 wherein the accelerated aging means comprises aging in an elevated radiation environment.

16. (previously presented) The method of claim 13 wherein the accelerated aging means comprises aging in an elevated humidity environment.

17. (currently amended) A degradation sensor for a polymeric structure, the sensor comprising:
a first quantity of conductive particles dispersed in a first portion of the polymeric structure to define a conductive composite portion, the first portion comprising less than a total polymer in the structure; and
a means for communicating an electrical measurement of the conductive composite to an electrical measurement apparatus; and
a means for correlating a decrease in said electrical measurement consistent with a decrease in resistivity to a degraded condition of said polymeric structure.

18. (previously presented) The degradation sensor of claim 17 wherein the means for communicating an electrical measurement of the conductive composite comprises a portion of the conductive composite disposed on an outside surface of the polymeric structure.

19. (previously presented) The degradation sensor of claim 17 wherein the means for communicating an electrical measurement of the conductive composite comprises a metallic conductor communicating with the conductive composite.

20. (previously presented) The degradation sensor of claim 17 wherein the means for communicating an electrical measurement of the conductive composite comprises an electromagnetic emitter.

21. (previously presented) The degradation sensor of claim 20 wherein the electromagnetic emitter is a radio frequency identification tag.

22. (previously presented) The degradation sensor of claim 17 wherein the conductive composite defines a filament disposed in the polymeric structure.

23. (previously presented) The degradation sensor of claim 17 wherein the conductive composite defines an extruded strip in the polymeric structure.

24. (previously presented) The degradation sensor of claim 17 wherein the conductive composite defines a plurality of portions of conductive composite, said plurality of portions of conductive composite being separated from each other by portions of polymer without said conductive particles.

25. (currently amended) A polymeric structure comprising:
a degradation sensor for the polymeric structure, the sensor comprising:
a first quantity of conductive particles dispersed in a first portion of the polymeric structure to define a conductive composite portion, the first portion comprising less than a total polymer in the structure; and
a means for communicating an electrical measurement of the conductive composite to an electrical measurement apparatus ; and
a means for correlating a decrease in said electrical measurement consistent with a decrease in resistivity to a degraded condition of said polymeric structure.

26. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is the insulation of an electrical wire.

27. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is an electrical cable.

28. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is a pipe.

29. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is a building siding portion.

30. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is an aircraft composite structure.

31. (previously presented) The polymeric structure of claim 25 wherein the polymeric structure is a boat hull.

32. (withdrawn) A method of determining degradation of a first polymer, the method comprising the steps of:
adding conductive particles to a second polymer to form a conductive composite comprising a preselected weight percent of conductive particles;
making an electrical connection with the conductive composite and measuring an electrical property of the conductive composite; and
equating the measured electrical property of the conductive composite with the electrical property of a previously-degraded sample of the conductive composite to determine the degradation of the first polymer.

33. (withdrawn) The method of claim 32 wherein the measured electrical property is electrical resistivity.

33. (withdrawn) The method of claim 32 wherein the measured electrical property is electrical conductivity.

34. (withdrawn) The method of claim 32 wherein the degradation of the first polymer is a mechanical degradation.

35. (withdrawn) The method of claim 34 wherein the mechanical degradation is a degradation of a mechanical property selected from the group of a strength property, a hardness property, a density property, a dimensional property, and an elongation property.

36. (withdrawn) A condition-sensing electrical cable comprising a combination of:
an insulation component made of a first polymeric material; and

an age sensor comprising a first quantity of conductive particles dispersed in a second polymeric material to define a conductive composite portion disposed within the cable, and;

a means for communicating an electrical measurement of the conductive composite portion to an electrical measurement apparatus.

37. (withdrawn) A condition-sensing building component comprising a combination of:

a structural portion made of a first polymeric material; and

an age sensor comprising a first quantity of conductive particles dispersed in a second polymeric material to define a conductive composite portion disposed in proximity to the structural portion, and;

a means for communicating an electrical measurement of the conductive composite portion to an electrical measurement apparatus.

38. (withdrawn) A condition-sensing vehicle comprising a combination of:

a structural component made of a first polymeric material; and

an age sensor comprising a first quantity of conductive particles dispersed in a second polymeric material to define a conductive composite portion disposed in proximity to the structural component, and;

a means for communicating an electrical measurement of the conductive composite portion to an electrical measurement apparatus.

39. (previously presented) A method of determining degradation of a polymer, the method comprising the steps of:

adding conductive particles to the polymer to form a conductive composite comprising a preselected weight percent of conductive particles;

making an electrical connection with the conductive composite and measuring a resistivity of the conductive composite; and

equating the resistivity of the conductive composite with the resistivity of a previously-degraded sample of the conductive composite to determine the degradation of the polymer;

wherein a decrease in a resistivity correlates to an age degraded state of the polymer.

40. (previously presented) The method of claim 39 wherein said degraded state of the polymer is a decrease in specific volume with age.

41. (previously presented) The method of claim 39 wherein said degraded state of the polymer is an increase in density of the polymer with age.

42. (previously presented) The method of claim 39 wherein said degraded state of the polymer is a reduction of elongation at break with age.

43. (previously presented) The method of claim 39 wherein said degraded state of the polymer is a loss of volatile fractions with age.

44. (previously presented) The method of claim 39 wherein said equating the resistivity of the conductive composite with the resistivity of a previously-degraded sample of the conductive composite is performed at several temperatures and Arrhenius methodology is used to predict the remaining life of the polymer.

45. (new) A method of determining degradation of a polymer, the method comprising the steps of:
measuring the resistivity of a composite sensor made of said polymer and a conductive filler;
equating a reduction of resistivity of said composite sensor to a degraded state of said polymer wherein said reduction of resistivity results from volumetric shrinkage of said polymer from aging.

46. (new) The method of determining degradation of a polymer of claim 45 wherein said degraded state is a reduction of elongation of said polymer.

47. (new) The method of determining degradation of a polymer of claim 45 wherein said degraded state is a densification of said polymer.

48. (new) The method of determining degradation of a polymer of claim 45 wherein said degraded state is a loss of volatile components of said polymer

49. (new) The method of determining degradation of a polymer of claim 45 wherein said sensor is disposed in a product made of said polymer.

50. (new) The method of determining degradation of a polymer of claim 49 wherein said sensor is disposed on a surface of a product made of said polymer.

51. (new) The method of determining degradation of a polymer of claim 49 wherein said product is electrical insulation.

52. (new) The method of determining degradation of a polymer of claim 49 wherein said product is a polymeric aircraft structural part.